

5(1)

AUTHOR:

Fleyshman, V. G.

SOV/64-59-1-3/24

TITLE:

For a Faster Development of the Chlorine Industry
(Khlornoy promyshlennosti - bystryye tempy razvitiya)

PERIODICAL:

Khimicheskaya promyshlennost', 1959, Nr 1, pp 9-16 (USSR)

ABSTRACT:

For the coming Seven-year Plan an increase in the production of chlorine by 3.3 as compared with the preceding one is provided. At present, the major part of the plants of the chlorine industry is working with electrolyzers BGK-13 with a load of 5000 a; during the Seven-year Plan, plants BGK-17 with a load of 20-25.000 a, even with tanks up to 100.000 a, shall be introduced, raising the capacity of some plants by 5 - 6. The acceleration of the production of synthetic fibers also requires an extension in the production of caustic soda which is carried out abroad according to different methods (3 tables). Domestic and foreign data of diaphragm and mercury electrolytic cells are compared, and investment savings by higher current intensities (Tables 1 - 3), and electrolytic tanks with 30.000 and 100.000 a (Table 4) are indicated. The production of various inorganic and organic chlorine products is described,

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For a Faster Development of the Chlorine Industry

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and the total output of both types to be produced between 1956 - 65 is compared with (Table 5). The production of methyl chloride, for instance, shall be more than 30 times in 1965 than in 1957, with an increase in capacity by 50. The chloroform production shall be increased by 3 in 1965, and Freon-22 and fluoroplast shall be made of it. Carbon tetrachloride shall also be produced to an increased extent and be used for the preparation of Freon-12 and "aminoenant acid". The vinyl chloride production shall increase by 10 by 1965, and the entire organochemical industry based on acetylene shall be much intensified. The production of phosgene and herbicides shall be increased, and new plants for the production of different detergents shall be built. Some tasks of the research and planning organizations are illustrated, and it is mentioned among other things that NIIkhimmash will develop a new chlorine rotary compressor with a capacity of 2.000 m³/hour, and a high-capacity (800 m³ of chlorine per hour) piston chlorine compressor without sulphuric-acid lubrication will be developed at the LenNIIkhimmash for the production

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of liquid chlorine according to the compression method. The UkrNIIkhimmash will design an automatized evaporating plant with a capacity of 120.000 tons/year for electrolytically obtained lyes, as well as a new automatic rubber-lined hermetic centrifuge. The Tsentral'nyy konstruktorskiy byuro gidravlicheskikh mashin (Central Design Office for Hydraulic Machines) shall develop a hermetic pump with no stuffing box, and release it for production. Besides the above-mentioned examples, several other examples of the planned production are indicated. There are 5 tables.

Card 3/3

AGAFYEV, N.I.; BALATOV, P.S.; ZVEREV, B.P.; IVANOV, I.A.; KRUGLIY, S.M.;
NIMYI, I.M.; FLEYSHMAN, V.G.; KHAIN, V.A.; SHUR, V.A.; EL'SKIY, V.N.

Condensation of a solution in vacuum evaporator installations.
Prom.energ. 15 no.4:15-16 Ap '60. (MIRA 13:6)
(Evaporating appliances)

ALEKSEYEV, G.A., prof.; GRINSHPUN, L.D.; FLEYSHMAN, Ye.V.; CHERNYAK, V.Ya.

Macroglobulin reticulolymphomatosis (Waldenström's disease). Terap.
arkh. no.7:17-24 J1 '62. (MIRA 15:8)

1. Iz 3-y kafedry terapii (zav. - chlen-korrespondent AMN SSSR
prof. I.A. Kassirskiy) Tsentral'nogo instituta usovershenstvovaniya vrachev.

(MACROGLOBULINS)

GRINSHPUN, L.D.; FLEYSHMAN, Ye.V.; DUBROVSKAYA, V.S.

Diagnostic value of Thorn test. Lab. delo 10 no.5:265-267 '64.
(MIRA 17:2)

1. III kafedra terapii (zaveduyushchiy - deystvitel'nyy chlen
AMN SSSR I.A.Kassirskiy) Tsentral'nogo instituta usovershenstvo-
vaniya vrachey, Moskva.

POCHTARENKO, N.; ZIL'BERMAN, S., inzh.-tekhnolog; FLEYSHMANIS, O.,
inzh. po trudu

Five-day working week in a tobacco factory in Riga. Sots.trud 4
no.3:113-115 Mr '59. (MIRA 12:4)

1. Direktor Rishskoy tabachnoy fabriki (for Pochtarenko).
(Riga--Tobacco industry)

1. IARIN, P: S., and FLIATE, D. M.
2. USSR (600).
4. Yakimov, P. A.
7. Glaring errors in the description of the production of pulp and paper ("Cellulose and fiber plants of the U. S. S. R." P. K. Krasil'nikov, P. A. Yakimov. Reviewed by P. S. Iarin, D. M. Fliate). Bum. prom. 27 no. 6, 1952
9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413320015-2

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000413320015-2"

FLICINSKI, Eugeniusz; JORDAN, Jozef

Contemporary views on the circulation of labyrinthine fluids.
Otolaryng. Pol. 19 no.1:149-155 '65.

1. Z Kliniki Otolaryngologicznej Akademii Medycznej w Gdansk
(Kierownik: prof. dr. med. J. Iwaszkiewicz) i z Zakladu Ana-
tomii Prawidlowej Akademii Medycznej w Gdansk (Kierownik:
prof. dr. med. W. Lasinski).

FLICINSKI, Eugeniusz

Neurofibromatosis of the tongue in generalized Recklinghausen's disease. Otolaryng. Pol. 18 no.1:153-155 '64.

1. Z Kliniki Otolaryngologicznej Akademii Medycznej w Gdansk
(Kierownik: prof. dr med. J. Iwaszkiewicz).

FLICINSKI, Eugeniusz; KOWALCZUK, Henryk

General anesthesia with trilene and nitrous oxide in otolaryngological surgery. Otolaryng. Pol. 18 no.2:259-261 '64..

1. Z Kliniki Otolaryngologicznej Akademii Medycznej w Gdansk
(Kierownik: prof. dr. med. J. Iwaszkiewicz).

FLICINSKI, Eugeniusz; KOWALCZUK, Henryk

Anesthesia in otolaryngological practice in the Academy of
Medicine in Gdansk. Otolaryng. Pol. 18 no.4:537-541 '64

1. Z Kliniki Otolaryngologicznej Akademii Medycznej w Gdansk
(Kierownik: prof. dr. med. J. Iwaszkiewicz.

FLICINSKI, Eugeniusz

A case of keloid of the aural concha. Otolaryng. Pol. 19 no.3:
401-402 '65.

1. Z Kliniki Otolaryngologicznej AM w Gdansk (Kierownik: prof.
dr. med. J. Iwaszkiewicz).

ACC NR:

AP6036045

SOURCE CODE: UR/0121/66/000/010/0016/0018

AUTHORS: Flid, M. D.; Degtyarenko, N. S.

ORG: none

TITLE: Factors affecting the productivity of resilient grinding of hard alloys, using grinding wheels

SOURCE: Stanki i instrument, no. 10, 1966, 16-18

TOPIC TAGS: grinding, metal cutting, grinding wheel, metal alloy/ T15K6 metal alloy, VK2 metal alloy, ASO10M5 grinding wheel, ASO6B1 grinding wheel

ABSTRACT: Experimental data are presented and empirical relationships are derived to show that the influence of technological factors and operating regimes on the productivity of resilient grinding (the contact load is applied through a resilient element: 1--3 kg/mm) of hard alloys. Grinding wheels ASO10M5 and ASO6B1 were used on alloys T15K6, VK2, and several other alloys. Effects of speed (6--30 m/sec), contact force (1--15 kg), properties of machined metals, contact area, and grinding wheel

properties on the productivity (mm^3/min) were measured and are presented. Empirical relationships based on these curves are established for each of the important parameters, and a general empirical equation for the productivity of resilient grinding as a function of pertinent parameters is established in the form

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UDC: 621.923.4:621.921.34:621.9.025.7.001.5

ACC NR: AP6036045

$$Q = C_1(C_\sigma - \sigma_{izg}) v^{x/y} P_y^{-z} F_k^{-z} K_z K_{sv},$$

where Q = productivity; σ_{izg} = bending strength of machined metal; v = grinding speed; P_y = grinding force; F = grinding area; C_1 , C_σ , K_z , K_{sv} , x, y, and z are constants which are tabulated for the two types of grinding wheels tested. This equation is also solved for the necessary grinding force (P_y) to give a certain productivity, and an example of the necessary calculations is presented. Orig. art. has: 5 figures, 3 formulas, and 1 table.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 003

Card 2/2

FLID, R. M.

USSR/Chemistry - Hydrogenation
Chemistry - Dehydrogenation

Jun 1946

"The Kinetics and Mechanism of Catalytic Hydro- and Dehydrogenation," M. Ya. Kagan and R. M. Flid, 13 pp

"Zhur Fiz Khim" Vol XX, No 6

Describes method and results of experiments using benzol, toluol, hexamethylene, and methylhexamethylene. Graphs, tables and chemical formula.

PA 18T78

1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX	
<p><i>CA</i></p> <p>Kinetics and mechanisms of catalytic hydro-dehydrogenation reactions. 1. The kinetics of the dehydrogenation of cyclohexane and methylcyclohexane in the presence of a hydrogen acceptor. M. Ya. Kagan and R. M. Frid (Karpov Inst. Phys. Chem., Moscow). <i>Acta Physicochim. U.S.S.R.</i> 21, 358-70 (1946) (in English); <i>J. Phys. Chem. (U.S.S.R.)</i> 20, 803-16 (1946). — The kinetics of the reaction $C_6H_{12} + C_6H_5CH_3 \rightleftharpoons C_6H_6 + C_6H_5CH_2$ are studied in both forward and reverse directions over a Pd (10% Pd on SiO_2 gel) and a Cr_2O_3 (20% Cr_2O_3 on SiO_2 gel) catalyst. The temp. range investigated was 125-170° for the Pd, 327-366° for the Cr_2O_3 catalyst. There was no H evolved. The activation energies of the forward and reverse reactions are equal, ~ 10 kg.-cal. on Pd and ~ 13 kg.-cal. on Cr_2O_3. Dehydrogenation of cyclohexane over Cr_2O_3 in absence of a H acceptor (with liberation of H_2) has an activation energy of 40 kg. cal. The rate data indicate the conjugate dehydrogenation is a reversible first-order reaction. It is retarded by toluene and benzene over Pd, but not over Cr_2O_3. The dehydrogenation of cyclohexane in the absence of a H acceptor is retarded by H over Cr_2O_3, but not over Pd.</p> <p>H. A. Van Nostrand</p>		2	
<p>ASS. 5.1.1 METALLURGICAL LITERATURE CLASSIFICATION</p>			

CA

Kinetics and mechanism of catalytic (de)hydrogenation.
IV. Kinetics of cyclohexane dehydrogenation on nickel
and chromium oxide. P. M. Pini and M. Ya. Kagan
(Lomonosov Inst. Chem. Technol., Moscow). *Zhur. Fiz. Khim.* 24, 1408-14 (1980); cf. *C.A.* 44, 1313r. For the
prepn. of catalyst I, 281 g. $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ was dissolved
in 1 l. H_2O ; NaOH was added; to the aluminate soln. was
added a soln. of 130 g. $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ in 1.5 l. H_2O under
const. mixing. Pptn. was made by a fast CO_2 current in the
cool. The ppt. was decanted, washed, dried, and reduced
in H_2 during 12 hrs. up to 340-380°. The catalyst contained
23.6% Ni. For the prepn. of catalyst II, an Fe-free silica
gel was impregnated with a soln. of CrO_3 , dried, heated up
to 480° during 7-8 hrs. in H_2 . The catalyst contained 20%
 Cr_2O_3 . The reaction was studied in a flow system ($\pm 0.5^\circ$).
High ppt. was performed after reduction in standard condi-
tions: I was reduced by H_2 at 10-15° above the temp. of
the run during 1.5 hrs., and II was first treated with O_2 during
3 hrs. at up to 300°, then reduced by H_2 at 400-420° during
2 hrs. The degree of conversion of cyclohexane was detd.
by the n of the product. Cyclohexenes produced with II
were detd. bromometrically. For I, the kinetic law is
 $d[\text{C}_6\text{H}_{10}]/dt = k[\text{C}_6\text{H}_{10}]/[\text{C}_6\text{H}_6]$ at 280° in 3 cases: (1) the reac-
tant is pure C_6H_{10} , $10^4 k = 2.07 \text{ ml./hr.}$; (2) mixts. of C_6H_{10}
and C_6H_6 are fed into the system, $10^4 k = 2.01$; (3) mixts. of
 C_6H_{10} and H_2 , $10^4 k = 1.65$. For II, the kinetic law
 $d[\text{C}_6\text{H}_{10}]/dt = k[\text{C}_6\text{H}_{10}]/[\text{H}_2]$ is obeyed at 300° and the values
of $10^4 k$ for the 3 cases are, resp., 6.04, 6.0, and 5.9. In ac-
cordance with the work of Taylor, et al. (*C.A.* 34, 5294d)
these findings are explained on the basis of a retardation of
the reaction by adsorption of C_6H_6 for I and H_2 for II.
Michel Boudart

FLID, R.M.

USSR

①
Contact isomerization of allyl alcohol into propionaldehyde. R. M. Flid and N. S. Proskakov. *Trudy Akad. Nauk. SSSR, Khim. Tekhnol.* 1933, No. 4, 10-20; *Referat. Zhur., Khim.* 1934, No. 34034. —The reaction was carried out in the vapor phase at 160-410° using a catalyst (1). As I was studied: reduced Cu, ZnO, ZnO + Na₂CO₃ (0.6 and 6% Na₂CO₃), aluminum silicate, aluminum silicate treated with NaOH, Al₂O₃, silica gel, and H₃PO₄ on C. Isomerization occurred both on metal and oxide catalysts. In the case of the latter, the reaction proceeded easier the more basic the oxide. The isomerization mechanism of allyl alc. is viewed as a combined reaction of dehydrogenation and hydrogenation with combined H according to:
 $CH_2=CHCH_2OH + I \rightleftharpoons CH_2=CHCHO$ (adsorbed) + I-H;
 $I-H_2 + CH_2=CHCHO \rightleftharpoons I + CH_3CH_2CHO$ (adsorbed); CH_3CH_2CHO (adsorbed) $\rightleftharpoons CH_3CH_2CHO_{out}$.
M. Hosh

per

FLID, R. M.

USSR/Chemistry - Reaction Kinetics

Dec 53

"S. V. Gorbachev's Article on the Theory of Self-Accelerating Reactions," R. M. Flid

Zhur Fiz Khim, Vol 27, No 12, pp 1885-6

Discusses S. V. Gorbachev's comparison (Zhur Fiz Khim, Vol 26, p 1504, 1952) between N. A. Shilov's kinetic eqs and those of Christiansen and Kramers. Disagrees with his conclusions on the ground that he used erroneous derivations of both set of eqs.

275T19

USSR.

✓ The relation between the acidity function and the ionic strength of a solution. I. I. Moroz, *Zh. Fiz. Khim.*, 1954, 28, 1110-13. *Prilad. Khim.*, 27, 1110-13, 1954. The acidity function f is defined as $f = \log C_{H^+} + pK_a + \Delta\mu$ where $\Delta\mu$ is a constant and μ is the ionic strength of the solution. This function is related to the acidity function H_0 and the ratio of the concentrations of the ionized and non-ionized base C_{B^+}/C_B of Hammett *et al.*, *C.A.*, 28, 4968) by $H_0 = \log (C_{B^+}/C_B) = pK_a - f$. Exptl. values of f as a function of μ were obtained with solutions of 1.075M HCl to which were added 1.57-2.05M KCl, 0.517-1.02M CaCl₂, and 0.353-1.603M MgCl₂. The plot of f vs. $\Delta\mu$ is linear, giving $L = 0.100$. The exptl. values of f agree with the exptl. values obtained with HCl up to 3.23M, H₂SO₄ up to 3M, and 0.943M H₂SO₄ to which were added 0.915-3.08M KCl, 0.69-1.44M KNO₃, and 0.815-3.60M NaNO₃. The exptl. values agree with the data of Hammett, *et al.* (*loc. cit.*). *p*-Nitroaniline was used as indicator. I. Bencowitz

FLID R.M.

1.5.5.5 R.

... of some sulfates ...
 ... M H₂O ...
 ... of ...
 ... the acid function y ...
 ... holds when no complex ion ...
 ... can be applied to ...
 ... quantitatively, the ...
 ... the increase in y ...
 ... of the following sulfates ...
 ... effect: Li, Na, NH₄, K, and Rb ...
 ... of increasing ionic radii and activities ...
 ... between that of the sulfates of K and Rb ...
 ... Zn, Cd, and Al affect y slightly and in the ...
 ... Zn > Cd > Al ... The increase in y with the concentration ...
 ... described to the formation of a complex ...
 ... 2M for a to y = log C₀ + pK_a + ...
 ... the concns of H₂O originally in the acid ...
 ... the reaction, resp., and M = the moles of ...
 ... leads to the conclusion that practically all of the ...
 ... in the form of [H₂(SO₄)]⁻ ... Benowitz]

USSR/Kinetics. Combustion. Explosions. Topochemistry. Catalysis. B-9

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26250

Author : M.Ya. Kagan, R.M. Flid, N.S. Prostakov

Inst : Moscow Institute of Fine Chemical Technology

Title : Kinetics of Contact Isomerization of Allyl Alcohol into Propionic Aldehyde.

Orig Pub : Tr. Mosk. in-ta tonkoy khim. tekhnol., 1955, vyp. 5, 45-49

Abstract : The dependence of the yield of propionic aldehyde at the contact isomerization of allyl alcohol on temperature and contact duration was studied; Cu precipitated on pumice was used as catalyst. In the authors' opinion, the catalyst activity is dropping during the work in consequence of the poisoning of the catalyst by a polymer film forming on its surface. The drop of the catalyst activity is accelerated by the temperature rise and does not depend on the volume speed of the allyl alcohol flow. The reaction under study is of the zero order at 200 to 220°; the activity energy and the constants of the isomerization speed were computed.

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AID P - 3569

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 6/20

Authors : Flid, R. M. and I. I. Moiseyev

Title : ~~Interaction of some components of catalysts during the liquid-phase hydration of acetylene~~

Periodical : Zhur. prikl. khim., 28, 711-717, 1955

Abstract : The reactions of mercury and of sulfates of mercury with ferrous and ferric sulfates have been studied. The experiments were carried out at 90-95°C in sulfuric acid. The effect of SO_4 -ion, aluminum sulfate and sodium sulfate on the voltage is determined, and the data compiled in tables. Six tables, 1 drawing, 10 references, 6 Russian (1946-1954).

Institution : Moscow Institute of Fine Chemical Technology im. Lomonosov. Chair of Technology of Basic Organic Synthesis

Submitted : Mr 30, 1953

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FLIP, R. M.

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end
200
200
200

Mechanism of gas-phase catalytic reaction of acetylene with acetic acid. R. M. Dui and A. I. Kosolapoff. Chem. Technol. (Moscow), Zhur. Obshchei Khim. 27, 1258-61(1957).—The results of passage of C_2H_2 and $AcOH$ over $Zn(OAc)_2$ on a carrier were examined. At 270° with the carrier of degassed C, formation of vinyl acetate and ethynyl acetate depends only on the partial pressure of $AcOH$; the lower concn. of $AcOH$ tends to give higher yields of vinyl acetate and lower yields of ethynyl acetate. In expts. at 270-300° with Al_2O_3 carrier, increased space velocity of the gas mixt. raises the yield of ethynyl acetate. Passage of vinyl acetate and $AcOH$ over the catalyst at 220-300° does not yield ethynyl acetate. Thermodynamic analysis of the results indicates that ethynyl acetate forms directly from C_2H_2 and the dimer of $AcOH$, whereas vinyl acetate forms from C_2H_2 and monomeric $AcOH$.

G. M. Kosolapoff

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6410, 8.11.

20-2-31/60

AUTHORS: Flid, R. M. , Mironov, V. A.

TITLE: The Kinetics of Liquid Phase Hydrobromination of Acetylene
in the Presence of Mercury Salts (Kinetika zhidkofaznogo
gidrobromirovaniya atsetilena v prisutstvii soley rtuti)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp.347-350
(USSR)

ABSTRACT: There exist relatively few scientific papers on the catalytic
interaction in the liquid phase of acetylene with hydrohalides
in presence of mercury salts. Acetylene hydrobromination has
been investigated only in the gaseous phase. According to the
data available, there are formed, in addition to bromovinyl,
also different isomers of dibromethane or their mixtures.
From reactions of hydrochlorination and hydroiodination only
asymmetrical adducts were identified among the dihalide deri-
vatives. Because production of both isomers of dibromethane
appeared to be possible, the authors of the paper under re-
view carried out the investigation outlined in the title of
the present paper. A . The influence of the relation between

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The Kinetics of Liquid Phase Hydrobromination of Acetylene in the Presence of Mercury Salts

reagents upon the degree of conversion of acetylene. It was determined that the total degree of acetylene conversion as well the yield of vinylbromide and ethylidendibromide do not depend on the relation between the reagents, this relation varying within the limits $\text{HBr} : \text{C}_2\text{H}_2 = 0,5 : 4$. The dependence obtained made it possible, completely obviously, to determine the zero-kinetic order of the reaction with respect to hydrobromine. B. The influence of the contact duration upon the speed of the acetylene hydrobromination. The kinetic measurements showed, (1), that the formation of 1,1-dibromethane is the result of a simultaneous attachment of two molecules of HBr and C_2H_2 , without vinylbromide participating as intermediate product; thus the reactions of formation of vinylbromide and of ethylidendibromide are two independent parallel reactions; and (2), that both parallel reactions are of first order with respect to acetylene with a hampering by the two reaction products. C. The influence of the concentration of mercury bromide in the contact solution upon the speed of the acetylene hydrobromination. As can be seen from Chart Nr 2 of the present paper, α_0 increases monotonously when the concentration of HgBr_2 is increased, α_1 goes through a maxi-

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The Kinetics of Liquid Phase Hydrobromination of Acetylene in the Presence of Mercury Salts

mum, and α_2 increases rather sharply. This fact can be connected with the increase in the probability of the collision between the acetylene molecule and two molecules of the catalyzer when the concentration of HgBr_2 is increased. There exists reason to assume that the reaction is catalyzed by the ion HgBr_2 , because HgBr_2 , being saturated with respect to the coordination, can hardly participate in the activation of acetylene. On basis of kinetic equations, speed constants of the reactions were computed for all four concentrations of the catalyzer; the values of these constants increase as the concentration is increased. The authors of the paper under review maintain that the activation of acetylene is based on a withdrawal of the doublets of α -electrons. If the limiting stage of acetylene hydrobromination is supposed to be its activation, a "sympathy" must exist between the potential of oxidation, as measure of its acceptoric quality, and its catalytic activity. Reproduction Nr 2 of the present paper shows that the linear dependence between $\lg K$

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The Kinetics of Liquid Phase Hydrobromination of Acetylene in the Presence of Mercury Salts

(constant of the speed of the reaction) and ξ for both reactions of hydrobromination, and the total conversion of acetylene is preserved. In this context, the only possible cause for the increase in speed of the reaction is the decrease in activation energy as the value of ξ increases. The linear form of the function $\lg K$ makes it possible to state that the acetylene activation is the limiting stage of the processes of hydrobromination. There are 2 figures, 2 tables, and 4 references, 1 of which is Soviet.

ASSOCIATION: Moscow Institute for Fine Chemical Technology imeni
M. V. Lomonosov
(Moskovskiy institut tonkoy khimicheskoy tekhnologii
im. M. V. Lomonosova)

PRESENTED: December 14, 1956, by I. N. Nazarov, Member of the Academy

SUBMITTED: December 7, 1956

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20-2-31/60

The Kinetics of Liquid Phase Hydrobromination of Acetylene in the Presence
of Mercury Salts

AVAILABLE: Library of Congress

Card 5/5

Flid, R. M.

- AUTHORS: Rapoport, I. B., Flid, R. M., and Lis, K. 20-2-23/50
- TITLE: On the Polymerization and Cyclization Reactions of Isobutylene (O reaktsii polimerizatsii i tsiklizatsii izobutilena).
- PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 2, pp. 244-247 (USSR)
- ABSTRACT: The polymerization of olefines with different numbers of carbon atoms takes place at not high temperatures; at elevated and non-elevated pressures and in the presence of various catalysts which possess properties of acids. Thermodynamical data on the polymerization of isobutylene show that the reaction very thoroughly takes place at 100-200°C. A rise of temperature reduces the activity of the catalyst due to its poisoning with resin products. The products of polymerization are the same on aluminum-silicate catalysts, independent of the fact whether these latter are synthetic or taken from nature. Dimers and trimers are the chief products. The speed of polymerization of isobutylene is much higher than that of butylene (according to Kazanskiy and Rozengart). The polymerization of butylene on aluminum-silicate catalysts is accompanied by an isomerization under

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On the Polymerization and Cyclization Reactions of
Isobutylene

20-2-23/50

formation of various isomeric octenes. At 370°C olefinelike and at 450-500°C aromatic hydrocarbons form. Higher compounds, up to pentamers, can also form on various catalysts. According to thermodynamic calculations the aromatization reaction is also possible for isobutylene. The thermodynamic analysis made by the authors as well of the gross reaction as of its individual stages leads to the following main conclusions: 1. The gross reaction $2C_4H_8 \rightleftharpoons 3H_2 + C_6H_4(CH_3)_2$

(o-, m-, p-) (table 1) is possible (when P = 1 atmosphere) with a practically complete conversion of isobutylene already at lower temperatures (120-130°C) under a predominant formation of m-xylol. The equilibrium of the stage of cyclization of isooctene to isomeric (cis- and trans-, o-, m-, p-) dimethylcyclohexanes is practically independent on temperature displaced to the right. 2. The degree of dimerization of isobutylene decreases with increasing temperature, With increasing pressure the reaction is somewhat displaced to the right. 3. A equilibrium yield of a xylol-mixture in dehydrations of isomeric (cis- and trans-,

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On the Polymerization and Cyclization Reactions of
Isobutylene

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o-, m-, p-) dimethylcyclohexanes increases with increasing temperature. A full conversion can practically be attained at a temperature of 600°C (when P = 1 atmosphere). After some considerations on further possibilities and desired investigations the authors state that the present paper is dedicated to the study of the polymerization and aromatization reactions over the catalyst $\text{MoO}_3\text{-Al}_2\text{O}_3$. The experimental part with the usual data and conclusions follows: 1. The possibility of a polymerization with subsequent aromatization of isobutylene over a molybdenum-aluminum-catalyst was for the first time proved. 2. At temperatures up to 200°C the polymerization reaction over the above-mentioned catalyst proceeds under formation of di-, tri- and still higher polymers. The direction of reaction changes with increasing temperature and aromatic hydrocarbons appear in the product of the catalysis. 3. In the fraction boiling at 132-148°C, which had formed on the passage of isobutylene over the Mo-Al-catalyst at 400°C, up to 60% para- and meta-xylol, i.e. about 6 g per 1 m³ gas were determined.

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On the Polymerization and Cyclization Reactions of
Isobutylene

20-2-23/50

There are 4 tables and 7 references, 6 of which are Slavic.

ASSOCIATION: Moscow Institute for Fine Chemical Technology imeni
M. V. Lomonosov (Moskovskiy institut tonkoy khimicheskoy
tekhnologii im. M. V. Lomonosova).

PRESENTED: By B. A. Kazanskiy, Academician, May 4, 1957

SUBMITTED: May 3, 1957

AVAILABLE: Library of Congress.

Card 4/4

FLID, R.M.; SKVORTSOVA, N.F.

Catalytic alkylation of benzene with dimethyl ether. Khim. nauka i
prom. 3 no.2:286-287 '58. (MIRA 11:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova.

(Benzene) (Alkylation) (Ether)

FLID, R.M.; KRASOTKIN, A.Ye.; SHPICHINETSAYA, L.S.; CHIRIKOVA, A.V.;
BELYI, A.P.; BARATS, M.I.; KRUPISOV, B.K.; BELYANINA, Ye.T.

Effect of alkaline admixtures on catalytic oxidation of primary
alcohols to aldehydes. Khim.nauk i prom. 3 no.5:683 '58.

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova.

(Alcohol)

(Oxidation)

(Catalysts)

SOV/81-59-16-56362

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 16, pp 52-53 (USSR)

AUTHORS: Flid, R.M., Golynets, Yu.F.

TITLE: On the Physical Interpretation of I.M. Sechenov's Equation

PERIODICAL: Tr. Mosk. in-ta tonkoy khim. tekhnol., 1958, Nr 8, pp 111-115

ABSTRACT: It has been proposed to express the change in the solubility of gases in salt solutions depending on the relative decrease of the free energy in the dissolution of the salt in the solvent ΔZ_m by the equation $\ln(S_0/S) = k \int_0^m d\ln \Delta Z_m$, where S_0 and S is the solubility in the pure solvent and in the salt solution, m the molarity of the solution and k is a constant. With the aim of verifying this equation the experimental data on the solubility of helium, argon, nitrous oxide and acetylene in aqueous solutions of various salts have been elaborated. The integration has been carried out graphically. In all cases the experimental data are well described by the mentioned equation. In the absence of the interaction of the gas and salt molecules the value of k is the same for the various salts. For helium and argon, for instance, the values of k are equal for the systems containing KCl, NaCl and NaNO_3 . The difference in the values of k for different salts or the deviation from the linear dependence of $\ln(S_0/S)$ on

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On the Physical Interpretation of I.M. Sechenov's Equation

SOV/81-59-16-56362

$\int_0^m d\ln \Delta z_m$ points to the interaction of the gas and the salt. Such an interaction takes place especially between acetylene and ZnCl_2 . The detection of acetaldehyde in the solution formed as a result of the hydration of acetylene points to the same fact.

V. Kogan.

Card 2/2

5(4)

AUTHOR: Flid. R. M.

SOV/76-32-10-17/39

TITLE: The Kinetics and Mechanism of the Catalytic Conversion of Acetylene (Kinetika i mekhanizm kataliticheskikh prevrashcheniy atsetilena) II. On Some Problems of the Reaction Mechanism of the Addition of Various Molecules to Acetylene (II. O nekotorykh vorposakh mekhanizma reaktsiy prisoyedineniya razlichnykh molekul k atsetilenu)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 10, pp 2339 - 2346 (USSR)

ABSTRACT: The catalytic addition reactions of water, hydrogen halides, acetic acid, hydrogen cyanide etc. to acetylene can take place in the liquid or vapor-(gaseous) phase. Mercury (II) salts, copper (I) salts and in some cases the salts of zinc, cadmium, silver and other metals are used as catalysts. Carothers (Karothers), Petrov et al. (Refs 4-7) continued the work by Nef and Ingold (Ingol'd) (Refs 8-10) and assumed that the catalyst leads to an isomerization of acetylene to

Card 1/4

The Kinetics and Mechanism of the Catalytic Conversion SOV/76-32-10-17/39
of Acetylene. II. On Some Problems of the Reaction Mechanism of the
Addition of Various Molecules to Acetylene

isoacetylene. B.N.Dolgov (Ref 13) and P.G.Sergeyev (Ref 14) investigated the hydration process of acetylene in the presence of mercury (II) salts and gave an incorrect representation, taking into account the work by A.P.El'tekov (Ref 15). A great number of investigations ((Refs 16-20) show a reaction mechanism according to which a mercury - acetylene complex compound (called Biginelli complex compound) is formed in the first stage. The second stage represents a solvolysis of this complex compound. A.N.Nesmeyanov et al (Refs 22-24) showed that Pb^{4+} and Sn^{4+} form complex compounds with acetylene but that they can not serve as catalysts. Acetylene reacts with the complex formers according to the type of a donor-acceptor interaction, with acetylene donating the π -electrons and the complex former accepting them. A.A.Klebanskiy et al (Ref 26) observed an increase in the acidity of the solution in this case. The effect of the medium on the reaction

Card 2/4

The Kinetics and Mechanism of the Catalytic Conversion SOV/76-32-10-17/39
of Acetylene. II. On Some Problems of the Reaction Mechanism of the
Addition of Various Molecules to Acetylene

of acetylene with a contact solution is shown by the example of mercury chloride. The catalyst must have the capability to form a complex compound with acetylene as well as with the molecule to be added. The activation of acetylene is obviously based on its deformation by the donation of some of the π -electrons to the catalyst. For a selective carrying out of the catalysis processes the initial mixture should have an excess of that component to which the catalyst has the least affinity. There are 30 references, 20 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M.V.Lomonosova (Moscow Institute of Fine Chemical
Technology)

SUBMITTED: May 10, 1957

Card 3/4

The Kinetics and Mechanism of the Catalytic Conversion of Acetylene. II. On Some Problems of the Reaction Mechanism of the Addition of Various Molecules to Acetylene SOV/76-32-10-17/39

Card 4/4

FLID, R.M., Doc Chem Sci -- (diss) " Study in the field of cata-
lytic ^{Conversions} ~~transformations~~ of acetylene." Mos, 1959. 19 pp with graphs
(Min of Higher Education USSR. Mos Institute of Fine Chem Technology
im M.V. Lomononov). 200 copies List of author's works, pp 18-19 (23 titles)
(KL, 40-59, 101)

8

F.L.D., R.M.

PHASE I BOOK EXPIRATION NOV/3537

Academiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk

Truly, E. S. (Transactions of the Institute of Chemical Sciences, Kazakh SSR, Academy of Sciences, Vol 5) Alma-Ata, Izd-vo Akademii nauk Kazakhskoy SSR, 1959. 154 p. 1,000 copies printed.

Ed.: M.D. Zhukova; Tech. Ed.: Z.P. Kozlovina; Editorial Board of Series: D.V. Sokol'skiy (Resp. Ed.), V.G. Gutsalyuk, and E.V. Suvorov (Resp. Secretary).

PURPOSE: This collection of articles is intended for personnel of scientific research laboratories, laboratories of industrial enterprises, and faculty members of schools of higher education.

CONTENT: The collection reviews problems of liquid-phase catalytic hydrogenation to upgrade and reactivate various products. Hydrogenation of unsaturated bonds of various types, adsorption of hydrogen on different catalysts, chromatographic separation of mixtures, and the effect of halogen salts of alkali metals on the rate of hydrogenation reactions promoted by various skeleton catalysts are described. Conditions of catalytic hydrogenation of natural fat, sunflower oil, and such synthetic products as esters of high-molecular fatty acids are set out. Dehydration of the butane fraction carried out in combination with isomerization is analyzed. Principles of selecting catalysts and regenerating them are reviewed and the formation of adsorption potentials on metal catalysts is explained. Research results and conclusions drawn on the basis of experimental findings. References accompany most of the articles.

Shenina, V.P., A.M. Khasanova, and D.V. Sokol'skiy. Chromatographic Separation of Mixtures of Nitrobenzene-Aniline Products 28

Golodova, L.S., and D.V. Sokol'skiy. Study of Hydrogenation Reactions of Natural Fats and Their Simplest Synthetic Analogues, the Esters of High-Molecular-Fatty Acids 36

Golodova, L.S., D.V. Sokol'skiy, and Ye.A. Podgachava. Kinetics and Mechanism of Hydrogenation of Sunflower Oil in Solution 44

Luk'yakov, A.I. Problem of Formation of Adsorption Potentials on Metal Catalysts 50

Xerhanov, A.I., and D.V. Sokol'skiy. Potentiometric Study of Hydrogenation of Benzalacetone Over Skeleton Pt/M Catalysts 56

Bavalkina, L.A., G.Y. Faylova, Z.P. Frustakova, and D.V. Sokol'skiy. Dehydroisomerization of the Commercial Fraction of n-Butane Over Oxide Catalysts 64

Shenina, V.P., E.M. Vlasova, and D.V. Sokol'skiy. Catalytic Reduction of Aromatic Nitro Compounds. Part II 72

Pliginskii, E.M. (Moskovskiy Institut tekhnicheskoy tekhnologii i Khimii M.V. Lomonosova-Moscow Institute of Fine Chemical Technology named M.V. Lomonosov). Some Principles of Selecting Catalysts for Liquid-Phase Hydrogenation of Acetylene to Acetaldehyde 81

Shestakov, M.I., and D.V. Sokol'skiy. Some Methods of Reactivating the Skeleton Nickel Catalyst 92

Shestakov, M.I., and D.V. Sokol'skiy. Hydrogenation of Acetylene in the Liquid Phase 97

Sokol'skiy, D.V., and L.P. Dunina. Hydrogenation of a Sodium Salt of Propionic Acid Over Platinum 110

Sokol'skiy, A.M., and D.V. Sokol'skiy. Hydrogenation of Cinnamic Alcohol (Styrene) 110

Card 4/5

5(3)

SOV/156-59-1-29/54

AUTHORS: Flid, R. M., Basova, R. V., Chirikova, A. V.

TITLE: The Kinetics of the Catalytic Synthesis of Vinyl Acetate in the Presence of Zinc Aluminate (Kinetika kataliticheskogo sinteza vinilatsetata v prisutstvii alyuminata tsinka)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 117-119 (USSR)

ABSTRACT: Previous works of the authors (Refs 1 and 2) suggested the possibility of a selective synthesis of vinyl acetate. Different from industrial production a surplus of acetylene was not used but the ratio $C_2H_2 : CH_3COOH$ was equal to or less than 1, whereby the capacity of the contact mechanism is much increased and the separation of vinyl acetate is facilitated. The kinetics was investigated in the temperature interval $230-270^\circ$. In the first test run the acetylene partial pressure was varied and the acetic acid partial pressure maintained constant. In the second test run $p_{C_2H_2} = \text{const.}$ and

p_{CH_3COOH} variable. The tabulated data show that the reaction

Card 1/2 depends neither on the partial pressure of acetylene nor on

SOV/156-59-1-29/54

The Kinetics of the Catalytic Synthesis of Vinyl Acetate in the Presence of Zinc Aluminate

that of acetic acid. Therefore the reaction rate can be described by a second order kinetic equation: $U = K \cdot P_{C_2H_2} \cdot P_{CH_3COOH}$

From the tabulated experimental data obtained at different temperatures (230° , 250° , 270°) $E = 22,000 \pm 600$ cal was calculated as activation energy. There are 3 tables and 2 Soviet references.

ASSOCIATION: Kafedra tekhnologii osnovnogo organicheskogo sinteza Moskovskogo instituta tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Chair of Technology of Basic Organic Synthesis of the Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: July 4, 1958

Card 2/2

SOV/80-59-1-41/44

AUTHORS: Flid, R.M., Minsker, K.S. and Skvortsova, K.F.

TITLE: Production of Methyl Chloride by the Catalytic Hydrochlorination of Dimethyl Ester (Polucheniye khloristogo metila kataliticheskim gidrokhlorirovaniyem dimetilovogo efira)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Nr 1, pp 230-233 (USSR)

ABSTRACT: The dimethyl ester is formed as a by-product in a number of technological processes, and this raises the problem of its effective utilization. The authors show that it can be used for obtaining methyl chloride in its catalytic interaction with hydrogen chloride. The most active catalyzers are γ - Al_2O_3 (375 to 400°C); CdCl_2 on the activated carbon AR-3 (275 to 300°C) and ZnCl_2 on the activated carbon AR-3 (120 to 200°C). At the volume velocity of 300 to 400 l/l cat.hr the yield of CH_3Cl attains the following values: 95 to 96%; 85 to 97% and 78 to 82% respectively. A preliminary saturation of the catalyzer surface with hydrogen chloride is necessary for the main-

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SOV/80-59-1-41/44

Production of Methyl Chloride by the Catalytic Hydrochlorination of Dimethyl Ester

tenance of high activity of the process.
There are 2 tables and 2 Soviet references.

SUBMITTED: May 13, 1957

Card 2/2

S/08:/6:/000/006/003/015
B101/B201

AUTHOR: Plid, R. M.

TITLE: Some principles of the choice of catalysts for the hydration of acetylene to acetaldehyde in liquid phase

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1961, 65, abstract 6b474 (6B474). ("Tr. In-ta khim. nauk. AN KazSSR", 1959, 5, 81 - 91)

TEXT: A study has been made of the basic characteristics of the mechanism of catalytic hydration of C_2H_2 , and of the effect of parameters such as radius of cation, its ionization potential, its affinity to the electron, the normal electrode potential of the cation, and the chemical nature of the anion, upon the catalyst activity. The author believes that salts of Cu, and possibly, of Ag may be promising, non-mercurial catalysts of the hydration of acetylene in liquid phase. The catalyst suggested by the author, a solution of CuCl in 82% solution of $ZnCl_2$, has displayed an activity and selectivity not lower than Kucherov's mercury catalyst under laboratory conditions at a process temperature of Card 1/2

Some principles of the...

S/001/61/000/006/003/015
R101/B201

170 .. 175°C. [Abstracter's note: Complete translation.]

Card 2/2

5(2, 3)

SOV/153-2-2-5/31

AUTHORS: Flid, R. M., Golynets, Yu. F.

TITLE: Investigation of the Solubility of Acetylene in Aqueous Solutions of Electrolytes in Dependence on Temperature and Salt Concentration (Izucheniye rastvorimosti atsetilena v vodnykh rastvorakh elektrolitov v zavisimosti ot temperatury i kontsentratsii soli)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 173-179 (USSR)

ABSTRACT: The publication references concerning the problem mentioned in the title (Refs 1-5) are rather scarce, and - in the opinion of the authors - they indicate too high values in part. Table 1 and figure 2 give some data on the solubility of acetylene in water, in H_2SO_4 and electrolytic salt solutions in water, as well as some thermodynamic characteristics of this process. The analysis of the results obtained leads to the following conclusions: 1) The values for ΔH_{291} given in the publications, according to equation (2) and as computed by the authors, differ from one another. This can only be explained by the fact that the solubility drop of acetylene

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SOV/153-2-2-5/31

Investigation of the Solubility of Acetylene in Aqueous Solutions of Electrolytes in Dependence on Temperature and Salt Concentration

is less distinctly marked at temperatures above 25° than in the range of $0 - 25^{\circ}$. 2) With an increase in the H_2SO_4 -concentration, the acetylene solubility passes a minimum. With a rise in temperature, this minimum shifts to lower acid concentrations. The relative solubility reduction in aqueous H_2SO_4 -solutions becomes smaller. 3) With a rise in temperature in the range of $25 - 70^{\circ}$, the acetylene solubility in the solutions of the salts investigated also passes a minimum. It is the less distinctly marked, the higher the concentration of the salt is. In some solutions near saturation, the minimum stays away, and the acetylene solubility increases steadily with temperature. 4) At low temperature (25°), this solubility decreases in dependence on the nature of the salt cation in the following order:

$$NH_4^+ > K^+ > Na^+ > Li^+ > Ca^{2+} > Mg^{2+} > Cd^{2+} > Zn^{2+} > Mn^{2+} > Ni^{2+} >$$

$> Cr^{3+} > Al^{3+}$. The hydrating capability of the cations rises in the same order. At higher temperatures, the picture changes: at 50° , and even more at 70° , the cations of the above order are readjusted. 5) Also the type of the anion has a great

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SOV/153-2-2-5/31

Investigation of the Solubility of Acetylene in Aqueous Solutions of Electrolytes in Dependence on Temperature and Salt Concentration

influence on the solubility value. Here, too, a rise in temperature changes the order of the anions. 6) A change in the value ΔZ of the acetylene dissolution is accompanied by a change of the values ΔH and ΔS . So it can be asserted that with a change in temperature also the character of interaction between acetylene and water (Table 1) and the dissolved salts is changed. The solution heats and entropies are particularly intensely changed in solutions of those salts, the cations of which have a considerable polarizing effect. 7) As is shown in table 2, the acetylene solubility at 50° in a zinc chloride solution saturated at this temperature is very high, and much higher than in pure water. As the character of change in the values ΔH and ΔS with temperature is equal, the authors assume that there is a mutual relation between the entropy change (ΔS_T) and the heat effect of the acetylene dissolution in the solutions investigated (in accordance with reference 9). Figure 2 shows a linear dependence between ΔS and ΔH which is well ex-

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SOV/153-2-2-5/31

Investigation of the Solubility of Acetylene in Aqueous Solutions of Electrolytes in Dependence on Temperature and Salt Concentration

pressed by equation (4). There are 2 figures, 2 tables, and 9 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii; Kafedra osnovnogo organicheskogo sinteza
(Moscow Institute of Fine Chemical Technology; Chair of Basic Organic Synthesis)

SUBMITTED: February 7, 1958

Card 4/4

5.3200

5(3)

AUTHOR:

Flid, R.M.

67846

S/153/59/002/06/024/029

B115/B000

TITLE:

The Kinetics of Hydrohalogenation of Acetylene in the Liquid Phase in the Presence of Mercury Salts

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 6, pp 946-953 (USSR)

ABSTRACT:

It was the aim of this paper to investigate the fundamental rules valid for the addition kinetics of various hydrogen halides (HCl, HBr, HI) to acetylene in the presence of the corresponding salts of mercury. Contradictory results are frequently found in papers published hitherto. Experimental methods and apparatus used are described, and the concentrations of the components contained in the contact solutions (HgX_2 and HX) (X being a halogen) are given (Table 1). Products obtained by the liquid-phase hydrohalogenation of acetylene independently of the reaction temperatures and the concentrations of the contact solutions are given. Neither the degree of conversion of the acetylene nor the yields of end products of the reaction can be changed by changing the $\text{HX} : \text{C}_2\text{H}_2$ ratio within 0.5 to 4.0 at constant volume. The hydrochlorination of

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The Kinetics of Hydrohalogenation of
Acetylene in the Liquid Phase in the Presence
of Mercury Salts

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B115/B000

acetylene yields vinyl chloride only. According to results obtained (Table 2), it may be stated that the reaction rate can be related to acetylene by a kinetic equation of first order which is confirmed by the satisfactory agreement between the reaction rate constants. Two parallel reactions are taking place on hydrobromination, with vinyl bromide and 1,1-dibromoethane being formed. The reaction rate which in relation to acetylene may be expressed by an equation of first order is retarded by the products formed. The only product formed by hydroiodination, is 1,2-diiodoethane. The influence of temperature on the hydrochlorination (at 25 to 91°) and hydroiodination (at 30 to 112°) has been investigated (Table 3) and from the results obtained, the activation energies of the processes mentioned were calculated. From the data (Table 4), a generally valid linear relation was established between the logarithm of the velocity constant (k) and the oxidation potential of the contact solution (ϵ) when the concentration was varied (Diagram represented). The kinetic equations for the dependence of the reaction rates for hydrochlorination, hydrobromination,

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The Kinetics of Hydrohalogenation of
Acetylene in the Liquid Phase in the Presence
of Mercury Salts

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and hydroiodination on the activity of the contact solution were derived. The author is of the opinion that the limiting stage in the processes investigated is the activity of the acetylene, the mechanism of which is discussed in detail. There are 1 figure, 4 tables, and 6 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M.V.Lomonosova (Moscow Institute of Fine Chemical Technology
imeni M.V.Lomonosov)

Card 3/3

5(3)

SGV/80-32-3-34/45

AUTHORS: Flid, R.M., Chirikova, A.V.

TITLE: On the Possibility of a Catalytical Gas-Phase Synthesis of Vinylacetate at the Stoichiometric Ratio of the Reaction Components
(O vozmozhnosti provedeniya gazofaznogo kataliticheskogo sinteza vinilatssetata pri stekhiometricheskom sootnoshenii komponentov reaktsii)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 660-663 (USSR)

ABSTRACT: The synthesis of vinylacetate in the gaseous phase by catalysts in the molar ratios $C_2H_2 : CH_3COOH = 1 : 1$ and $1 : 2$ is investigated here. Optimum results were obtained at temperatures of 270-275°C. The volume rate was 250-300 l per liter of catalyst and hour. The degree of conversion of acetic acid is 30% and of acetylene 60% at a selectivity of 96-98%. The output per 1 liter of catalyst and hour is 6-7 times higher than that of the present methods. The molar ratio $1 : 2$ gives better and more constant results.

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ECV/8C-32-3-34/43

On the Possibility of a Catalytical Gas-Phase Synthesis of Vinylacetate at the Stoichiometric Ratio of the Reaction Components

There are 3 tables and 4 references, 3 of which are Soviet and 1 American.

SUBMITTED: July 5, 1957

Card 2/2

5(4)

SOV/76-33-1-20/45

AUTHORS:

~~Elid, R. M.~~, Mironov, V. A., Ostrovskaya, V. M.,
Aronova, N. I.

TITLE:

The Kinetics and Mechanism of the Catalytic Conversion of Acetylene (Kinetika i mekhanizm kataliticheskikh prevrashcheniy atsetilena). III. The Kinetics of the Hydrohalogenation of Acetylene in Liquid Phase in the Presence of Mercury Salts (III. Kinetika zhidkofaznogo gidrohaloidirovaniya atsetilena v prisutstvii soley rtuti)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 1,
pp 119 - 128 (USSR)

ABSTRACT:

The catalytic addition of hydrogen halide to acetylene in the presence of mercury salts had already been carried out for several times but the data obtained were incomplete and contradictory. In the case under review tests were conducted with HCl, HBr, and HI. The testing method and the testing apparatus were already described (Ref 1). The following products were obtained: On hydrochlorination vinyl chloride only; on hydrobromination vinyl bromide and 1,1-dibromoethane, and on hydroiodination only 1,2-diiodo-

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The Kinetics and Mechanism of the Catalytic Conversion of Acetylene. III. The Kinetics of the Hydrohalogenation of Acetylene in Liquid Phase in the Presence of Mercury Salts SOV/76-33-1-20/45

ethane. The influence of the contact time τ on the conversion degree of acetylene and the yield of reaction products at various temperatures and varying duration of the reaction were investigated (Table 2). The reaction velocity is shown by a kinetic equation of the first order (with respect to acetylene). It is impeded by the reaction products formed. The temperature influence was determined (Table 3), the activation energies were calculated and an unusual change of the temperature coefficient at the hydrochlorination reaction was observed. In all cases, a linear dependence between the logarithm of the velocity constant and the values of the oxidation potential of the contact solution, with various HgX_2 -concentrations, was observed.

It is assumed that acetylene is activated by taking out a doublet of π -electrons by the catalyzer whereby the acetylene molecule is deformed. There are 3 figures, 4 tables and 5 Soviet references.

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The Kinetics and Mechanism of the Catalytic Conversion of Acetylene. III. The Kinetics of the Hydrohalogenation of Acetylene in Liquid Phase in the Presence of Mercury Salts 30V/76-33-1-20/45

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii im. Lomonosova.
(Institute of Fine Chemical Technology imeni Lomonosov)

SUBMITTED: June 25, 1957

Card 3/3

5.1190
5.3200

S/153/60/003/02/26/034
B011/B006

AUTHORS: Flid, R. M., Chirkova, A. V., Raskina, G. V., Basova, R. V.

TITLE: Investigation in the Field of the Catalytic Synthesis of Vinyl Acetate, in the Vapor Phase

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 2, pp. 343-351 X

TEXT: The authors investigated the thermodynamics of the catalytic reaction of acetylene and acetic acid and found that two parallel reactions take place, i.e. monomeric acetic acid reacts with acetylene to give vinyl acetate, while dimeric acetic acid and acetylene form ethylidene diacetate. The direction of the reaction is determined by the relative amounts of monomer and dimer contained in the acetic acid. ZnO on Al_2O_3 was used as catalyst. It is shown in Table 8 that the activity of the catalyst is all the greater; the lower the roasting temperature of the latter was. Catalysts roasted at 400° have the highest activity. The authors proved that catalytic synthesis of vinyl acetate in the vapor phase using molar ratios of C_2H_2 : CH_3COOH = 1:1 and 1:2 is possible. Zinc acetate on

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A

Investigation in the Field of the Catalytic
Synthesis of Vinyl Acetate in the Vapor Phase

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S/153/60/003/02/26/034
B011/B006

activated carbon was used as catalyst (Tables 1 and 4). Optimum conditions for the process are 270-275°, a total rate of flow of 250-300 l/l cat · h. The degree of conversion attained under these conditions amounts to 30% of the acetic acid (Table 6), 60% of the acetylene (Table 5) at a selectivity of 96-98%. The efficiency of one liter of the catalyst per time unit is 6 to 7 times as great as that hitherto attained. The process can also be carried out in a pseudo-liquid state over a ZnO/Al₂O₃ catalyst. Respective experiments were made using

a column designed by the NIOPIK (Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (im. K. Voroshilova), Scientific Research Institute of Organic Semifinished Materials and Dyes (imeni

K. Voroshilov)). A method for preparing this catalyst is suggested. The authors studied the kinetics of vinyl acetate synthesis over ZnO/Al₂O₃

at 230° and 270°. The kinetics of this reaction is expressed by an equation of second order, i.e. $w = kP_{C_2H_2} \cdot P_{CH_3COOH}$. The activation energy

is $E = 22,000 \pm 600$ cal/mole. This paper was read at the Vsesoyuznaya

Card 2/3

Investigation in the Field of the Catalytic
Synthesis of Vinyl Acetate in the Vapor Phase

7-673
S/153/60/003/02/26/034
B011/B006

Konferentsiya "Puti sinteza iskhodnykh produktov dlya polucheniya
vysokopolimerov" (All-Union Conference "Ways of Synthesizing Initial
Materials for the Preparation of High Polymer Substances"), held at
Yaroslavl', from September 29 to October 2, 1958. There are 8 tables and
6 references, 5 of which are Soviet. X

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M. V. Lomonosova (Moscow Institute of Fine Chemical
Technology imeni M. V. Lomonosov). Kuskovskiy khimicheskiy
zavod (Kuskovskiy Chemical Plant)

Card 3/3

5.3400

77925
SOV/79-30-2-76/78

AUTHORS: Temkin, O. N., German, E. D., Flid, R. M.

TITLE: Letters to the Editor. The Part of Proton Acids in
Certain Catalytic Conversions of Acetylene

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, p 699 (USSR)

ABSTRACT: The relation between metal ion activity in solution and
proton activity in the addition reactions of acetylene
was investigated. Hydration of acetylene was carried
out in contact solution containing $\text{Cu}_2\text{SO}_4 - \text{H}_2\text{SO}_4$. The
latter was prepared by boiling $\text{CuSO}_4 + \text{H}_2\text{SO}_4$ with metallic
copper in nitrogen. The concentration of CuSO_4 in all
cases was 0.0128 mole. It was established that con-
version of acetylene decreases with increase of the
acid concentration, caused by formation of copper
acetylides, until concentration of acid reaches 10%.
At this point, acetaldehyde is formed. Introduction
of the acetylene into solution decreases potential of

Card 1/2

Letters to the Editor. The Part of Proton
Acids in Certain Catalytic Conversions
of Acetylene

77925
SOV/79-30-2-76/78

the copper electrode from E_1 to E_2 . Passing nitrogen through the contact solution increases this potential to a value smaller than E_1 . It was established that the termination of the formation of acetylides and the maximum concentration of acetaldehyde takes place at a definite ratio of potential to proton activity. There are 5 Soviet references.

Card 2/2

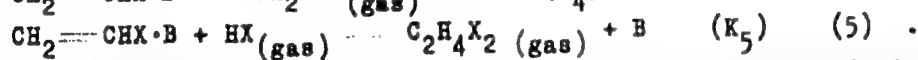
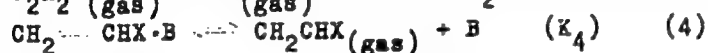
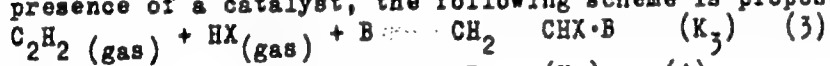
S/076/60/034/008/024/039/XX
B015/B063

AUTHOR: Flid, R. M.

TITLE: Kinetics and Mechanism of Catalytic Transformations of Acetylene. IV. Mechanism of the Formation of Disubstituted Ethane Derivatives From Acetylene

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1773 - 1777

TEXT: The author refutes the widespread opinion that the catalytic addition of various molecules HX (X = CN, Cl, Br, I, CH₃COO, etc.) to acetylene is always consecutive. As the reactions take place in the presence of a catalyst, the following scheme is proposed:



CH₂ = CHX · B is the state of the molecules of the vinyl derivative which is

Card 1/3

Kinetics and Mechanism of Catalytic Trans- S/076/60/034/008/024/039/XX
formations of Acetylene. IV. Mechanism of the B015/B063
Formation of Disubstituted Ethane Derivatives From Acetylene

bound to the catalyst B (on the surface or in a solution) in the form of a complex. The equilibrium constants of various addition reactions of HX to vinyl derivatives indicate that the formation of asymmetric, disubstituted ethane derivatives is thermodynamically more probable, and that only CH_3CHI_2 and $\text{CH}_3\text{CH}(\text{CN})_2$ are obtained in appreciable quantities within a wide temperature range. CH_3CHCl_2 and CH_3CHBr_2 are obtained in small quantities up to 450°C , while practically no ethylene diacetate is formed. As the experiments of Ref.1 have shown that a catalytic addition of HBr and CH_3COOH to acetylene gives not only vinyl derivatives but also large quantities of asymmetric ethylene dibromide and ethylene diacetate, it may be assumed that the products mentioned are not formed by a consecutive addition. Experimental data of Refs.4-6 indicate that, in accordance with the thermodynamic analysis, asymmetric disubstituted ethane derivatives are sometimes obtained by a direct reaction of molecules (addition of CH_3COOH , HBr, HI) with acetylene. The formation of various isomers $\text{C}_2\text{H}_4\text{X}_2$ is ascribed to the different character of the molecular activation of the

Card 2/3

Kinetics and Mechanism of Catalytic Trans- S/076/60/034/008/024/039/XX
formations of Acetylene. IV. Mechanism of the B015/B063
Formation of Disubstituted Ethane Derivatives From Acetylene

vinyl derivative by the catalyst. One of the two explanations suggested
by the author is in accordance with Markovnikov's rule. There are 1 table
and 6 references; 4 Soviet, 1 US, and 1 German.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
Lomonosova (Moscow Institute of Fine Chemical Technology imeni
Lomonosov)

SUBMITTED: November 17, 1958

Card 3/3

TEMKIN, O.N.; FLID, R.M.; GERMAN, E.D.; ONISHCHENKO, T.A.

Soluble complexes of unsaturated hydrocarbons with metal salts,
and their role in catalytic reactions. Part. 1: Soluble compounds
of acetylene with copper salts. Kin. i kat. 2 no.2:205-213 Mr-Ap
'61. (MIRA 14:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M.V. Lomonosova.

(Copper compounds)

(Acetylene compounds)

FLID, R.M.; TEMKIN, O.N. (Moscow)

Kinetics and mechanism of catalytic transformations of acetylene.
Part 5: Certain problems in selecting catalysts for the liquid
phase hydration of acetylene. Zhur. fiz. khim. 35 no.2:452-
459 F '61. (MIRA 16:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
Lomonosova.

(Acetylene) (Hydration) (Catalysts)

YAN TSZYAN'-SHEN [Yang Chien-shông]; FLID, R.M.; MAKHLIN, V.A.

Studies in the field of the liquid phase hydration of acetylene on catalysts other than mercury. Izv. vys. ucheb. zav.; khim. i khim. tekhn. 4, no. 2:218-224 '61. (MIRA 14:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova. Kafedra tekhnologii osnovnogo organicheskogo sinteza.

(Acetylene). (Hydration)

S/195/62/003/006/011/011
E075/E436

AUTHORS: Temkin, O.N., Flid, R.M., Malakhov, A.I.
TITLE: Soluble complexes of unsaturated hydrocarbons with
metal salts and their role in catalytic reactions
II. Soluble compounds of acetylene with silver salts

PERIODICAL: Kinetika i kataliz, v.3, no.6, 1962, 915-919

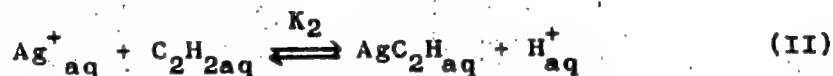
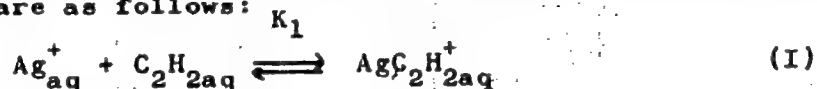
TEXT: In connection with the studies of the mechanism of hydration of acetylene in silver salt solutions, it becomes necessary to elucidate the possibility and conditions for the formation of the π -complex. The thermodynamics of the complex formation were investigated by a potentiometric method (Kinetika i kataliz, v.2, 1961, 205). The silver electrode was prepared by depositing Ag on a platinum spiral at the current density of 0.003 A/cm² and was immersed in aqueous 1 to 7 M H₂SO₄. As acetylene was passed through the solutions, the electrode potential decreased irreversibly (ΔE_1) and reversibly (ΔE_2). ΔE_1 was related to the formation of Ag₂C₂. ΔE_2 decreased with the increasing concentration of H₂SO₄, but increased and passed through a maximum with increasing temperature (from 20 to 100°C)

Card 1/3

Soluble complexes ...

S/195/62/003/006/011/011
E075/E436

in 0.288 M H₂SO₄. This indicated that a soluble half-acetylide HC≡C_{Ag} formed in addition to the π-complex. The reactions taking place are as follows:



The enthalpy values for reactions I and II are -13.20 and +6.86 respectively. Low catalytic activity of silver salts in the hydration process in comparison with that of copper salts is explained by low values of K_1 [K_1 (373°C) = 0.6 litre/mole] compared with the corresponding value for Cu (20 litres/mole). The strong tendency to acetylide interaction prolongs the formation of the halfacetylide. Moreover high acidities (6 to 7 M H₂SO₄) necessary for decreasing the acetylide interaction, cause a strong dehydration of the π-complex, which

Card 2/3

Soluble complexes ...

S/195/62/003/006/011/011
E075/E436

makes the hydration of acetylene more difficult. There are
6 figures and 2 tables.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii
im. M.V.Lomonosova (Institute of Fine Chemical
Technology imeni M.V.Lomonosov)

SUBMITTED: October 16, 1961

Card 3/3

FLID, R.M.; KRASOTKIN, A.Ye.

Preparation of aldehydes and ketones by a combined catalytic
oxidation and dehydrogenation of alcohols. Kin.i kat. 3
no.2:282-288 Mr-Ap '62. (MIRA 15:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
Lomonosova.

(Aldehydes)

(Ketones)

(Alcohols)

TEMKIN, O.N.; FLID, R.M.; MALAKHOV, A.I.

Soluble complexes of unsaturated hydrocarbons with metal salts and their role in catalytic reactions. Part 3: Soluble π -complexes of mercury (II) with acetylene. Kin. i kat. 4 no.2: 270-276 Mr-Ap '63. (MIRA 16:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.
(Mercury organic compounds) (Acetylene compounds)
(Catalysis)

FLID, R.M.; ALEKSEYEVA, N.F.; KHMELEVSKAYA, T.G.; GAYDAY, N.A.

Kinetics of liquid-phase hydrochlorination of acetylene in the
presence of cuprous chloride. Kin.1 kat. 4 no.5:698-705 S-0
'63. (MIRA 16:12)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
Lomonosova.

MOGILYANSKIY, A.I.; TEMKIN, O.N.; FLID, R.M.; BUNINA, R.V.

Potentiometric determination of divalent mercury concentration
using a mercury electrode. Zhur.anal.khim. 18 no.10:1211-1216
0 '63. (MIRA 16:12)

1. M.V.Lomonosov Moscow Institute of Fine Chemical Technology.

FLID, R.M., doktor khim.nauk; KARAKHANOV, R.A.

All-Union chemists' conferences in Alma-Ata and Erivan. Vest.
AN SSSR 33 no.2:119-121 F '63. (MIRA 16:2)
(Chemistry--Congresses)

TEMKIN, O.N.; GINZBURG, A.G.; FLID, R.M.

Soluble complexes of unsaturated hydrocarbons with metal salts and their role in catalytic reactions. Part 4: Thermodynamics of the formation of soluble π -complexes of ethylene with Ag^+ and Cu^+ ions. Kin. i kat. 5 no.2:221-227 Mr-Ap '64.
(MIRA 17:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

TREGER, Yu.A.; FLID, R.M.; SPEKTOR, S.S.

Solubility of allyl chloride in water and in aqueous solutions
of HCl. Zhur. fiz. khim. 38 no.2:478-481 F '64.
(MIRA 17:8)

TREGER, Yu.A.; FLID, R.M.; ANTONOVA, L.V.; SPEKTOR, S.S.

Complex formation of allyl chloride and allyl alcohol with
monovalent copper salts. Zhur.fiz.khim. 39 no.11:2831-2835
N '65. (MIRA 18:12)

SOV/115-59-7-15/33

9(2,3)

AUTHORS:

Lifshits, A.S., Flid, Ya.I.

TITLE:

Electronic Circuits for Differentiating Direct Current Voltages

PERIODICAL:

Izmeritel'naya tekhnika, 1959, Nr 7, pp 28-30 (USSR)

ABSTRACT:

In this paper the authors discuss several differentiating circuits composed of operational amplifiers. They explain calculation problems and present experimental characteristics of these circuits. The experimental investigations were performed by means of UPT-4 amplifiers which are linear within the limits of voltage changes at the output of ± 100 volts. Such circuits are used for solving many problems where derivatives of different time functions are required. In computers this operation is reduced to a differentiation of the direct current voltages. In a number of cases the circuits used for this purpose must provide a differentiation in a sufficiently wide frequency range (10-30 cycles). Known differentiating circuits, shown in fig.1, do not provide the required characteristics. The authors consider differentiating circuits with RC and dc amplifiers, and differentiating circuits with integrating amplifiers. The experimental characteris-

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SOV/115-59-7-15/33

Electronic Circuits for Differentiating Direct Current Voltages

tics plotted at $T_1 = 0.001$ sec and $T_1 = 0.01$ sec for a differentiating circuit with a dc amplifier are shown in fig.4. Fig.5 shows the experimental frequency characteristics for a differentiating circuit with an integrating amplifier. There are 2 circuit diagram sets and 3 graphs.

Card 2/2

FLID, Ya. I.; LIPSHITS, A.S.

Determining the effective value of voltage varying according to a
random law. Izv. tekhn. no. 5:35-38 My '61. (MIRA 14:5)
(Electronic measurements)

GITIS, Emmanuil Isaakovich. Prinimali uchastiye: SAMOYLENKO, V.I.,
kand. tekhn. nauk; BALTRUSHEVICH, A.V., kand. tekhn. nauk;
ZHDANOV, G.M., prof., retsenzent; KRAYZMER, L.P., kand.
tekhn. nauk, retsenzent; FLID, Ya.I., kand. tekhn. nauk, red.

[Automatic control of radio systems; electric and automatic
control of radio systems] Avtomatika radioustanovok; elektro-
radioavtomatika. Moskva, Energiia, 1964. 631 p.

(MIRA 17:11)

168100

31270
S/103/61/022/011/011/014
D271/D306

AUTHOR: Flidlidder, G. M. (Moscow)

TITLE: Dynamic characteristics of electromagnetic powder clutches

PERIODICAL: Avtomatika i telemekhanika, v. 22, no. 11, 1961, 1521-1532

TEXT: The author studied time and frequency characteristics and transfer functions and treated the clutch as a circuit element with distributed constants. Two assumptions were made: The mechanical characteristic of the clutch is absolutely rigid, i.e.

$$M(n) = \text{const} \quad (1)$$

the clutch moment is proportional to the magnetic flux, i.e.

$$M = k_M \Phi \quad (2)$$

Card 1/9

Dynamic characteristics of ...

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S/103/61/022/011/011/014
D271/D306

The natural dynamic characteristic represents the reaction to a unit jump of voltage, and the forced characteristic represents the effect of a unit jump of current. A forced characteristic is more basic because clutches are current supplied, natural characteristic is useful when choosing the system of control. The circuit of the clutch is given together with dimensions. A previous paper by the author is quoted for the general solution of transient processes (Ref. 4: Avtomatika i telemekhanika, v. 20, no. 1, 1959) and from this, the expressions for operator magnetic reluctances $f_1(p)$ are derived, taking into account the permeability in the working gap ($\mu_e = 4-8$) and the considerable thickness of the inner pole. The formula for the magnetic reluctance $f_c(p)$ of a thick-walled hollow cylinder is obtained in the appendix, starting from the thermal conductance equation and its solution; for large p

$$f_{1c}(p) = \frac{\pi(1+\epsilon)(1+\epsilon)}{2 \cdot 2} \sqrt{pT} \quad (7)$$

Card 2/9

Dynamic characteristics of ...

S/103/61/022/011/011/014
D271/D306

where ξ is relative thickness of the cylinder, $1 + \xi$ - correcting factor; for small p

$$f_{2c} = \frac{1 + pT}{1 + (1 - B) pT} \quad (8)$$

where B is a function of the geometry. When the clutch is supplied from a low impedance source,

$$pT_o \gg \sum_{i=1}^n \alpha_i f_i(p), \quad \sum_{i=1}^k \alpha_i f_i(p) \approx \sum_{i=1}^k \alpha_i = 1$$

and when the source is of high impedance

$$\sum_{i=1}^k \alpha_i f_i(p) \gg pT_o$$

Card 3/9

Dynamic characteristics of ...

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D271/D306

where

$$T_o = \frac{L_o}{R_{source} + R_{\Phi} + r}$$

- relative magnetic reluctance of circuit parts. The equation of the forced characteristic is

$$\frac{\Phi(p)}{\Phi_o} = \frac{1}{\sum_{i=1}^k \alpha_i f_i(p)} \quad (10)$$

Transfer functions corresponding to the natural (Φ_e) and forced (Φ) characteristics are tied by the relations

$$\Phi = \frac{1}{1/\Phi_e - pT_o}, \quad \Phi_e = \frac{1}{1/\Phi + pT_o}$$

Card 4/ 9

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S/103/61/022/011/011/014
D271/D306

Dynamic characteristics of ...

With the current supply the transfer function of the clutch, for high frequencies, is

$$\frac{\Phi(p)}{\Phi_0} \approx \frac{1}{\tau \sqrt{p}} \quad (12)$$

where

$$\tau = \frac{\pi}{2} \sum_{i=1}^k d_i (1 + \xi_i) \frac{(1 + \xi_i)}{2} \sqrt{T_i} \quad (13) \quad \checkmark$$

$\xi_1 = 0$ and $\xi_1 = 1$ for all disc shaped parts of the magnetic circuit.

Quadratic averaging is used for finding the transfer function at low frequencies with the result:

Card 5/9